

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 May 2004 (06.05.2004)

PCT

(10) International Publication Number
WO 2004/038817 A1

(51) International Patent Classification⁷: **H01L 39/16,**
H02H 9/02

Gai, NSW 2080 (AU). BEALES, Timothy, Paul [AU/AU];
5 Tomlin Street, Albion Park, NSW 2527 (AU).

(21) International Application Number:
PCT/AU2003/001395

(74) Agent: BALDWIN SHELSTON WATERS; 60 Margaret
Street, Sydney, NSW 2000 (AU).

(22) International Filing Date: 21 October 2003 (21.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2002952197 22 October 2002 (22.10.2002) AU

(71) Applicant (for all designated States except US): METAL
MANUFACTURES LIMITED [AU/AU]; 15 Merriwa
Street, Gordon, NSW 2072 (AU).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

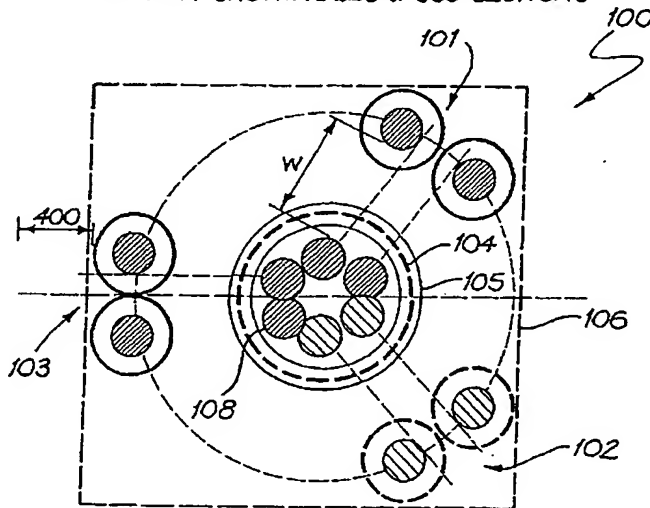
(72) Inventors; and

(75) Inventors/Applicants (for US only): DARMANN, Fran-
cis, Anthony [AU/AU]; 5 Glenda Place, Mount Kuring-

[Continued on next page]

(54) Title: SUPERCONDUCTING FAULT CURRENT LIMITER

TRIANGULAR 3 PHASE FCL SCHEMATIC
TOP VIEW SHOWING LEG CROSS SECTIONS



$$\text{BASIC FOOTPRINT} = (3.9.d + 2.w)^2$$

- SINGLE IRON CORE LEG, DIAMETER: d , WINDOW: $w \times h$
- COPPER LINKAGE COIL
- CRYOSTAT
- HTS COIL & SUPPORT
- OUTSIDE CASING & FOOTPRINT

(57) Abstract: A superconducting current limiting device (30) comprising: an interconnected high magnetic permeability structure including a central core (50) interconnected to at least a first and second arm (31, 32) branching off therefrom; a superconductive coil (33, 34) surrounding the central core for biasing the central core; a first alternating current coil (36, 37) surrounding the first arm and interconnected to an alternating current source; a second alternating current coil (38, 39) surrounding a second arm and interconnected to an alternating current load; the first and second alternating current coils being magnetically coupled to the central core wherein the device operates so as to limit the current passing through the device upon the occurrence of a fault condition in the load.